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i.e. lasers make it "hard" to limit collateral damage by minimal

warfare, one Pentagon official said. "It's one of those kind of things that works out you win the war; if not it costs you very much to add it to your strategic systems," he said.

Moreover has been developing concepts using nuclear explosive generators to power lasers for several years. An earlier concept was based on the use of krypton fluoride to lase in the ultraviolet waveband in an excimer laser (AW&ST July 1980, p. 34).

In the next few underground tests, aiming and tracking may be simulated. A pointing and tracking system for ultimate deployment in space would be the one being developed by DARPA for initial tests with chemical lasers under the Talon program.

Another attraction to the X-ray laser system is that no optics are required for focusing rods, eliminating a very costly, complex subsystem the U.S. is just beginning to develop in diameters large enough for chemical laser application in space.

A study funded by DARPA, Boeing Aerospace is looking at a number of battle scenarios as part of its initial integration effort for a 5-megawatt, 4-meter-dia. laser battle station. Those studies can be compared to chemical lasers in general such

as a 10-megawatt, 10-meter-dia. system, but also can be used to incorporate the X-ray laser system, one Defense Dept. official said. The study examines countermeasures, counter-countermeasures and the leverage gained by using space-based lasers in certain conflicts.

Laser battle stations in space gain the most leverage for the U.S. in thwarting a strategic weapons counter military attack on the U.S.—an attack designed to destroy not only U.S. strategic systems but general-purpose forces as well.

Such attacks would be targeted against ICBMs, SLBMs, particularly submarine bases, logistical centers and key tactical bases. An example is that, if the submarine base at Bangor, Wash., were attacked, a nuclear warhead would be targeted against Anaheim, Calif. Shipboard inertial navigation systems for ballistic missile submarines are manufactured there. Replacement submarines could not go out to sea without the inertial system.

"The concept would be an echelon strategic weapons attack designed not only to destroy but to atrophy the force," one U.S. official said.

"An attack would be based on limiting collateral damage so that the population could be coerced. An example is that there

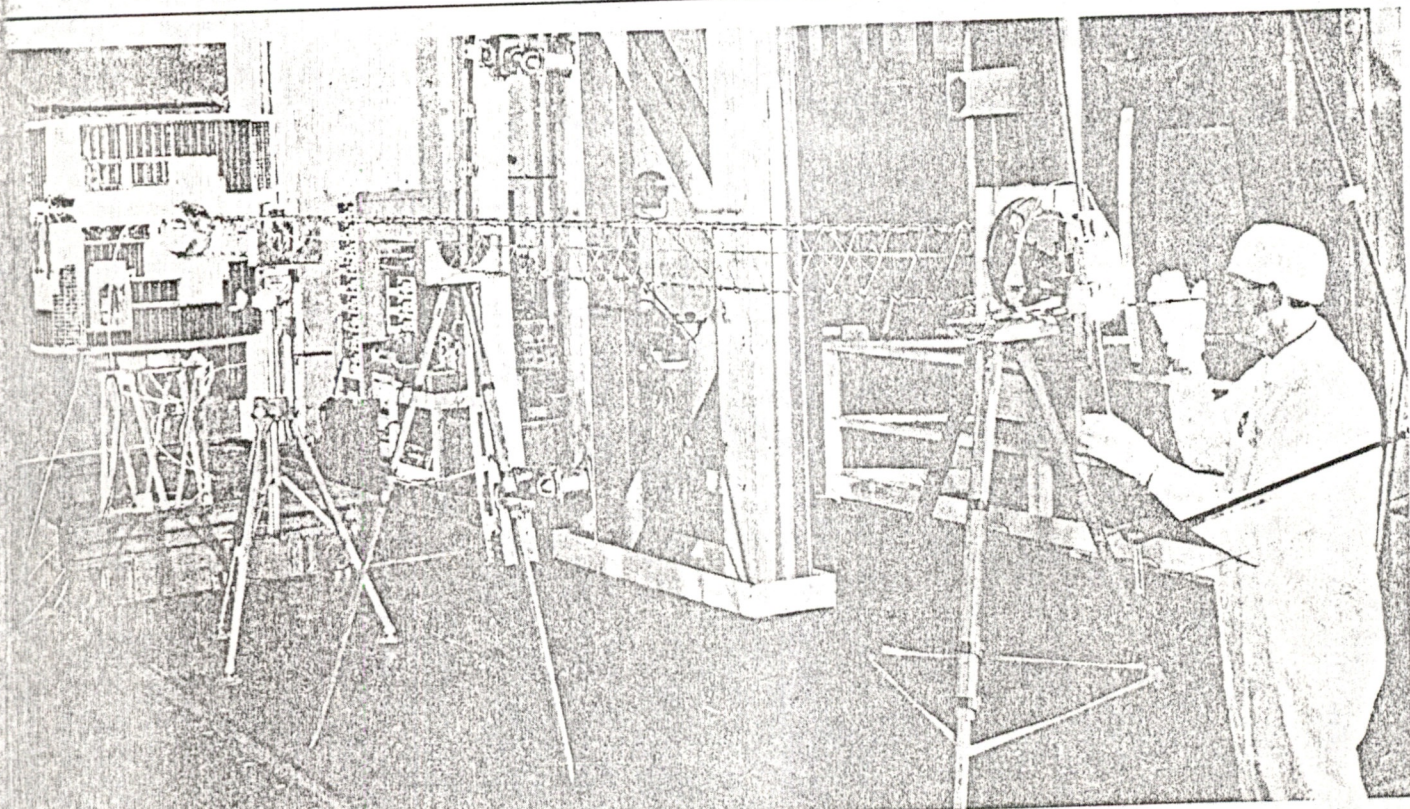
are four target areas which, if destroyed, could deny 97% of the Army's ammunition capability," he said.

Laser or beam weapons really come into their own under this type of scenario, according to Pentagon officials. "Even though a Soviet ICBM/SLBM salvo attack can help mitigate beam weapons, lasers can subtract from the attack, and such an attack must be closely coordinated and tailored. To insure this when lasers are used, the USSR would have to multiply the size of the attack."

Pentagon officials emphasize that beam weapons are not substitutes for military power. Laser weapons are "force multipliers, additives or levers."

Laser battle stations in space will be a finite resource and the tendency will be to hold them ready for use against a direct USSR attack on the U.S. It is less likely that they would be used against a USSR-backed client state where surrogates are employed. The likelihood of laser use grows if there is direct Soviet intervention in a client state hostility, one Pentagon official said.

"There is, therefore, a strong argument to get a laser system in space quickly before the dynamics of the balance of power change in a dramatic way." □



Spacecraft to Explore Boundary Between Earth and Space

USA/RCA Dynamics Explorer (DE A) undergoes checkout in the Goddard Space Flight Center magnetic test facility prior to mating with its sister spacecraft DE B (not pictured here). In the foreground one of the DE A spacecraft's two 20-ft. rigid support masts. In addition to instrumentation on the 20-ft. masts, additional data will be gathered by two 13-ft.-long tubular antennas and two 328-ft.

Vandenberg AFB, Calif. The two spacecraft will be placed in polar coplanar orbits where they will explore the boundary region between earth and space affecting auroral displays, radio transmissions, and climate and weather. The DE B spacecraft also will carry large sensing booms. It will hold six 33-ft. tubular antennas and a single 20-ft. rigid scientific instrument support boom. Both spacecraft are designed to minimize unbalancing torques caused by the

DE Nov 4 82

On Laser ABM weapons (see file):

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Laser weapons, according to this article, "gain the most leverage for the US in thwarting a strategic weapons countermilitary attack on the US..." "An attack would be based on limiting collateral damage so that the population could be coerced...lasers can subtract from the attack, and such an attack must be closely coordinated and tailored. To insure this when lasers are used, the USSR would have to multiply the size of the attack."

I.e., the laser weapons would make it hard to preserve (US) civilians for SU coercive purposes (to keep us from using our remaining weapons) because they would have to increase the size of the SU attack, to swamp lasers and to achieve some reliability.

Hyps: 1) Could it be that this is one of the motives for projecting this sort of attack by the Soviets--since the lasers are "the solution to this problem" (of a prospective Su attack of this sort); i.e., as a solution in search of a problem, the laser program called forth this prospect by the Sovs.

This may be true of ABM systems in general: against a counterforce (or countermilitary: including general purpose forces as targets; requiring an area defense, or at least a widespread and large number of ABMS; and one that will be thwarted in its coercive aims of minimizing collateral damage if it is necessary to multiply force size for reliability (see article)

Actually, the US actually thinks of using this strategy itself; and may be worried about Soviet laser ABM systems as a way of countering our own plans. This leads to an exaggerated (perhaps) expectation that the Soviets will develop such a system; and an expectation that we will eventually be confronted with a Soviet system which will create a US public willingness for a big investment in it, for which our Labs should be ready.

Moreover, this, like any ABM system, will work best with a US first strike. Although the space-based system isn't good against a ragged (retaliatory) attack, the chemical lasers would be best against that; and the X-ray system could be launched as needed on boosters.

THE XX-ray SYSTEM, WHICH IS BASICALLY A ONE_shot_ SYSTEM, WOULD BE GOOD "INSURANCE" AGAINST A Soviet PREEMPTIVE ATTACK, AS WE APPROACHED A FIRST_STRIKE OR MADE FIRST-STRIKE THREATS.